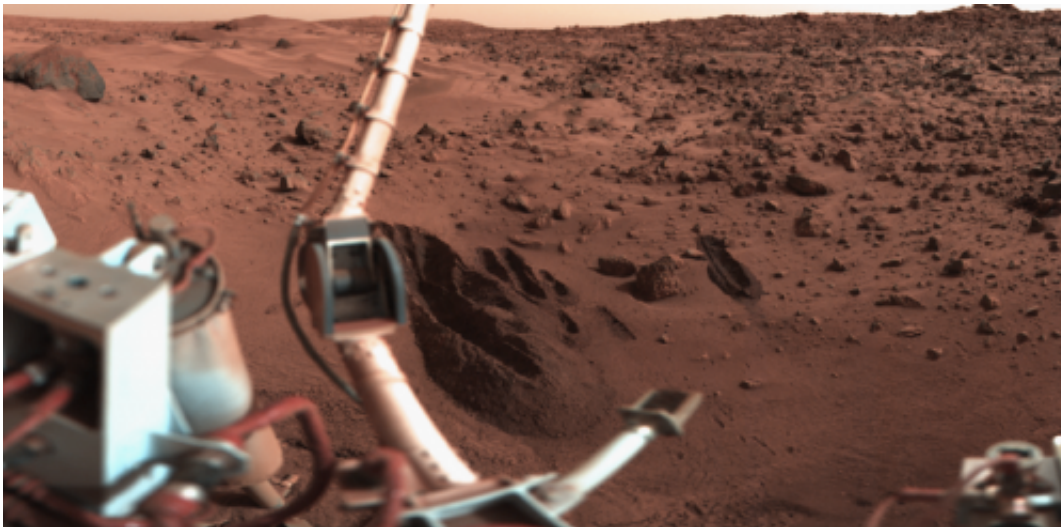


# Could Curiosity determine if Viking found life on Mars?

November 30 2011, By Paul Scott Anderson

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The landing site of Viking 1 on Mars in 1977, with trenches dug in the soil for the biology experiments. Credit: NASA/JPL

One of the most controversial and long-debated aspects of Mars exploration has been the results of the Viking landers' life-detection experiments back in the 1970s. While the preliminary findings were consistent with the presence of bacteria (or something similar) in the soil samples, the lack of organics found by other instruments forced most scientists to conclude that the life-like responses were most likely the result of unknown chemical reactions, not life. Gilbert V. Levin, however, one of the primary scientists involved with the Viking experiments, has continued to maintain that the Viking landers did

indeed find life in the Martian soil. He also now thinks that the just-launched Curiosity rover might be able to confirm this when it lands on Mars next summer.

Curiosity is not specifically a life-detection mission. Rather, it continues the search for evidence of habitability, both now and in the past. But is it possible that it could find evidence for life anyway? Levin believes it could, between its organics detection capability and its high-resolution cameras.

The major argument against the life-detection claims was the lack of organics found in the [soil](#). How could there be life with no organic building blocks? It has since been thought that any organics were destroyed by the harsh ultraviolet radiation or other chemical compounds in the soil itself. Perchlorates could do that, and were [later found in the soil by the Phoenix mission](#) a few years ago, closer to the north pole of [Mars](#). The experiments themselves, which included baking the soil at high heat, may have destroyed any organics present (part of the studies involved heating the soil to kill any organisms and then study the residual gases released as a result, as well as feeding nutrients to any putative organisms and analyzing the gases released from the soil). If Curiosity can find organics, either in the soil or by drilling into rocks, Levin argues, that would bolster the case for life being found in the original [Viking](#) experiments, as they were the “missing piece” to the puzzle.

So what about the cameras? Any life would have to be macro, of visible size, to be detected. Levin and his team had also found “greenish coloured patches” on some of the nearby rocks. (I still have a little booklet published by Levin at the time, “[Color and Feature Changes at Mars Viking Lander Site](#)” which describes these in more detail). When as a test, lichen-bearing rocks on Earth were viewed with the same camera system using visible and infrared spectral analysis, the results were remarkably similar to what was seen on Mars. Again, since then

though, those results have been widely disputed, with most scientists thinking the patches were mineral coatings similar to others seen since then. Of course, there is also the microscopic imager, similar to that on the Spirit and Opportunity rovers, although microorganisms would still be too small to be seen directly.

Regardless, Levin feels that Curiosity just might be able to vindicate his earlier findings, stating “This is a very exciting time, something for which I have been waiting for years. At the very least, the Curiosity results may bring about my long-requested re-evaluation of the Viking LR results. The Viking LR [life](#) detection data are the only data that will ever be available from a pristine Mars. They are priceless, and should be thoroughly studied.”

Source: [Universe Today](#)

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